

CLAIMS

What is claimed is:

1. An isolated weapon simulator having a bolt providing recoil for a user, said weapon simulator comprising:
 - 5 a housing including a piston chamber and a piston positioned in said chamber, said piston connected to the bolt;
a regulated gas supply detachably attached to said housing;
a valve chamber in said housing, said valve chamber connected with said regulated gas supply and said bolt; and
 - 10 a recoil valve positioned in said valve chamber, said recoil valve positioned to control the release of gas from said regulated gas supply to said piston chamber.
2. The weapon simulator as described in claim 1 further comprising:
 - a recoil cylinder port connecting said piston chamber with said valve chamber;
 - wherein said recoil valve controls the release of gas through said recoil cylinder port
 - 15 into said piston chamber to move said piston.
3. The weapon simulator as described in claim 1 further comprising:
 - a spring positioned in said valve chamber;
 - wherein said recoil valve includes a proximal end and a distal end; and
 - wherein said spring applies a force to said proximal end of said recoil valve in said
 - 20 valve chamber.
4. The weapon simulator as described in claim 1 further comprising:
 - a pilot valve connected to said regulated gas supply; and
 - a pilot channel connecting said pilot valve to said valve chamber;
 - wherein said pilot valve transmits gas to said distal end of said recoil valve from said
 - 25 gas supply to shift said recoil valve in said valve chamber.

5. The weapon simulator as described in claim 4 wherein said recoil valve comprises:
at least two valve gates; and
a central valve cavity between said at least two valve gates.
6. The weapon simulator as described in claim 4 wherein said recoil valve comprises:
5 a first gate, a second gate, and a third gate; and
a distal valve cavity defined between said first gate and said second gate;
wherein said central valve cavity is defined between said second gate and said third
gate.
7. The weapon simulator as described in claim 6 further comprising:
10 a gas supply channel through said housing connecting said gas supply with said valve
chamber;
wherein said pilot valve conveys gas to said distal end of said recoil valve to displace
said recoil valve in said valve chamber;
wherein said central valve cavity is in communication with said gas supply channel
15 and said recoil cylinder port to allow gas to engage said piston in said piston chamber.
8. The weapon simulator as described in claim 1 further comprising an exhaust port
traversing said housing from said valve chamber.

9. An independent weapon simulator having recoil movement when fired, said weapon simulator comprising:
- a firearm housing;
 - a slide assembly moveably connected to said housing;
- 5 means for supplying gas to forcefully displace said slide assembly, said gas supplying means detachably attached to said firearm housing; and
- valve means for controlling the distribution of gas from said gas supplying means to said slide assembly, said valve means positioned in said firearm housing between said gas supplying means and said slide assembly.
- 10 10. The weapon simulator described in claim 9 wherein said valve means further comprises:
- a valve chamber positioned in said housing; and
 - a recoil valve movably positioned in said valve chamber.
11. The weapon simulator described in claim 12 wherein said recoil valve comprises:
- 15 at least two valve gates; and
- a central valve cavity between said at least two valve gates.
12. The weapon simulator as described in claim 11 wherein said recoil valve comprises:
- a first gate, a second gate, and a third gate; and
 - a distal valve cavity defined between said first gate and said second gate;
- 20 wherein said central valve cavity is defined between said second gate and said third gate.

13. The weapon simulator as described in claim 12 further comprising:
a gas supply channel through said housing connecting said gas supply with said valve chamber;
wherein said pilot valve conveys gas to said distal end of said recoil valve to displace
5 said recoil valve in said valve chamber;
wherein said central valve cavity is in communication with said gas supply channel and said recoil cylinder port to allow gas to engage said piston in said piston chamber.
15. A method for generating recoil in a weapon simulator having a bolt slidably attached to a firearm housing comprising the steps of:
- 10 a) providing a piston slidably mounted in a piston chamber in the firearm housing;
b) attaching a regulated gas supply to the firearm housing, said gas supply distributing compressed gas;
c) providing a recoil valve in a valve chamber having a distal end and a proximal
15 end, said distal end of said valve chamber connected to a pilot valve and said proximal end of said valve chamber connected to said gas supply;
d) conveying gas using said pilot valve to said distal end of said valve chamber;
e) displacing said recoil valve in said valve chamber; and
f) forcing gas from said gas supply through said recoil valve into said piston
20 chamber to generate recoil.
16. The method as described in claim 15 wherein step c) further comprises the step of:
biasing said proximal end of said recoil valve in said valve chamber with a spring.

17. The method as described in claim 16 wherein step e) further comprises the step of:
forcing gas from said gas supply into a central valve cavity of said recoil valve; and
dispersing said gas from said central valve cavity into a recoil cylinder port connected
with said distal end of said valve chamber to overcome the biasing force of said spring.